

What Is Claimed Is:

1. A method for producing agricultural information on an area of interest comprising:

5 receiving map information that defines an agricultural area of interest for which agricultural information is desired;

receiving remote imaging data on the agricultural area of interest;

processing, using data related to an agricultural scene-object, said remote imaging data on the agricultural area of interest to produce reflectance factor data on the agricultural area of interest; and

10 using said reflectance factor data on the agricultural area of interest to produce a map for the agricultural area of interest that provides agricultural information.

2. A method, as claimed in claim 1, wherein:

15 said step of using includes producing a green vegetation index (GVI) map for the agricultural area of interest according to the following:

$$\text{GVI} = (\text{RF}_4^* - \text{RF}_3^*) (1 + L)F / (\text{RF}_4^* + \text{RF}_3^* + L)$$

where $\text{RF}_4^* = \text{RF}_4 - b_{43}$;

$\text{RF}_3^* = s_{43} \text{RF}_3$;

20 F is a scaling factor, and L is a soil adjustment coefficient.

3. A method, as claimed in claim 2, wherein:

said step of using includes producing a change in GVI map based upon a first GVI map for a first time and a second GVI map for a second time that is different than said first time.

4. A method, as claimed in claim 4, wherein:

said first time is within one week of said second time.

5. A method, as claimed in claim 1, wherein:

said step of using includes using said reflectance factor data to produce a soil zone index (SZI) map for the agricultural area of interest according to the following:.

$$SZI = x [\text{sqrt}((RF_3^* + L/2)^2 + (RF_4^* + L/2)^2) - 0.35]$$

5 where L is a soil adjustment coefficient and x is a scaling constant.

6. A method, as claimed in claim 5, wherein:

x has a value of 250.

10 7. A method, as claimed in claim 1, wherein:

said step of using includes producing a map for one of the following indexes: Difference Green Vegetation Index (DGVI), Perpendicular Green Vegetation Index (PGVI), Normalized Difference Vegetation Index (NDVI), Simple Ratio Vegetation Index (SRVI), Infrared Percentage Vegetation Index (IRPVI), Soil Adjusted Vegetation Index (SAVI),
15 Transformed Soil Adjusted Vegetation Index (TSAVI), Modified SAVI (MSAVI), and MSAVI2.

8. A method, as claimed in claim 7, wherein:

said step of using includes producing a change map based upon a first map for a
20 selected one of said indexes for a first time and a second map for the selected one of said indexes for a second time that is different than said first time.

9. A method, as claimed in claim 1, furthering comprising:

conveying said map on the agricultural area of interest to an entity that is interested in
25 agricultural information on the agricultural area of interest.

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10. A method for producing agricultural information on an area of interest comprising:

receiving map information that defines the agricultural area of interest for which agricultural information is desired;

5 receiving remote imaging data on the agricultural area of interest;

processing, using data related to an agricultural scene-object, said remote imaging data on the agricultural area of interest to produce reflectance factor data on the agricultural area of interest; and

10 using said reflectance factor data on the agricultural area of interest to produce a green vegetation index (GVI) map for the agricultural area of interest according to the following:

$$\text{GVI} = (\text{RF}_4^* - \text{RF}_3^*) (1 + L)F / (\text{RF}_4^* + \text{RF}_3^* + L)$$

where $\text{RF}_4^* = \text{RF}_4 - b_{43}$;

$$\text{RF}_3^* = s_{43} \text{RF}_3;$$

15 F is a scaling factor, and L is a soil adjustment coefficient.

11. A method, as claimed in claim 10, further comprising:

identifying said GVI map as a first GVI map that relates to a first time; and

20 repeating said step of receiving, processing and using to produce a second GVI map for the agricultural area of interest that relates to a second time that is different than said first time.

12. A method, as claimed in claim 11, further comprising:

using said first GVI map and said second GVI map to produce a change in GVI map.

13. A method for producing agricultural information on an area of interest comprising:

receiving map information that defines an agricultural area of interest for which agricultural information is desired;

5 receiving remote imaging data on the agricultural area of interest;

processing, using data related to an agricultural scene-object, said remote imaging data on the agricultural area of interest to produce reflectance factor data on the agricultural area of interest; and

10 using said reflectance factor data on the agricultural area of interest to produce a soil zone index (SZI) map for the agricultural area of interest according to the following:.

$$SZI = x [\text{sqrt}((RF_3^* + L/2)^2 + (RF_4^* + L/2)^2) - 0.35]$$

where L is a soil adjustment coefficient and x is a scaling constant.

14. A method, as claimed in claim 13, further comprising:

15 using said reflectance factor data to produce a vegetation index map before using said reflectance data to produce said soil zone index map.

15. A method, as claimed in claim 14, wherein:

said vegetation index map is a green vegetation index map.

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16. A method for producing agricultural information on an area of interest comprising:

receiving map information that defines an agricultural area of interest for which agricultural information is desired;

25 first receiving first remote imaging data on the agricultural area of interest for a first time;

first calibrating, using data related to an agricultural scene-object, said first remote imaging data on the agricultural area of interest to produce first calibrated data for said first time;

first using said first calibrated data to produce a first map according to a selected index;

second receiving second remote imaging data on the agricultural area of interest for a second time;

5 second calibrating, using data related to an agricultural scene-object, said second remote imaging data on the agricultural area of interest to produce second calibrated data for said second ;

second using said second calibrate data to produce a second map according to said selected index; and

10 using said first map and said second map to produce a change map that shows the change in the index between said first time and said second time.

17. A method, as claimed in claim 16, wherein:

15 said selected index is a green vegetation index (GVI) in which pixel values are determined according to the following:

$$\text{GVI} = (\text{RF}_4^* - \text{RF}_3^*) (1 + L)F / (\text{RF}_4^* + \text{RF}_3^* + L)$$

where $\text{RF}_4^* = \text{RF}_4 - b_{43}$;

$$\text{RF}_3^* = s_{43} \text{RF}_3;$$

F is a scaling factor, and L is a soil adjustment coefficient.

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18. A method for producing agricultural information on an area of interest comprising:

receiving map information that defines an agricultural area of interest for which agricultural information is desired;

25 receiving remote imaging data on the agricultural area of interest;

calibrating said remote imaging data on the agricultural area of interest to produce calibrated data; and

30 using said reflectance factor data on the agricultural area of interest to produce a green vegetation index (GVI) map for the agricultural area of interest according to the following:

$$GVI = (RF_4^* - RF_3^*) (1 + L)F / (RF_4^* + RF_3^* + L)$$

where $RF_4^* = RF_4 - b_{43}$;

$$RF_3^* = s_{43} RF_3;$$

F is a scaling factor, and L is a soil adjustment coefficient.

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19. A method, as claimed in claim 18, wherein:

said step of calibrating includes using a value associated with a pixel that corresponds to an agricultural scene-object.

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20. A method, as claimed in claim 19, wherein:

said agricultural scene object includes dense herbaceous green vegetation.

21. A method, as claimed in claim 19, wherein:

said agricultural scene object includes dry, bare, agricultural soil.

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22. A method, as claimed in claim 18, wherein:

said step of calibrating does not include the use of a value associated with a pixel that corresponds to an agricultural scene-object.

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23. A method, as claimed claim 18, wherein:

said step of calibrating includes using a calibration target.

24. A method, as claimed in claim 18, wherein:

said step of using includes producing a change map based upon differences between a first map for a first time and a second map for a second time that is different than said first time.

25. A method for producing agricultural information on an area of interest comprising:

receiving map information that defines an agricultural area of interest for which agricultural information is desired;

5 receiving remote imaging data on the agricultural area of interest; and

using said remote imaging data on the agricultural area of interest to produce a green vegetation index (GVI) map for the agricultural area of interest according to the following:

$$GVI = (ID_4^* - ID_3^*) (1 + L)F / (ID_4^* + ID_3^* + L)$$

where $ID_4^* = ID_4 - b_{43}$;

10 $ID_3^* = s_{43} ID_3$;

F is a scaling factor, L is a soil adjustment coefficient, and ID values are raw image data or radiance values.

26. A method for producing agricultural information on an area of interest comprising:

receiving map information that defines an agricultural area of interest for which agricultural information is desired;

receiving remote imaging data on the agricultural area of interest;

calibrating said remote imaging data on the agricultural area of interest to produce

20 calibrated data; and

using said reflectance factor data on the agricultural area of interest to produce a soil zone index (SZI) map for the agricultural area of interest according to the following:.

$$SZI = x [\sqrt{(RF_3^* + L/2)^2 + (RF_4^* + L/2)^2} - 0.35]$$

where L is a soil adjustment coefficient and x is a scaling constant.

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27. A method, as claimed in claim 25, wherein:

said step of calibrating includes using a value associated with a pixel that corresponds to an agricultural scene-object.

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28. A method, as claimed in claim 25, wherein:

said step of calibrating does not include the use of a value associated with a pixel that corresponds to an agricultural scene-object.

5 29. A method for producing agricultural information on an area of interest comprising:

receiving map information that defines an agricultural area of interest for which agricultural information is desired;

receiving remote imaging data on the agricultural area of interest; and

10 using said reflectance factor data on the agricultural area of interest to produce a soil zone index (SZI) map for the agricultural area of interest according to the following:.

$$SZI = x [\text{sqrt}((ID_3 * + L/2)^2 + (ID_4 * + L/2)^2) - 0.35]$$

where L is a soil adjustment coefficient, x is a scaling constant, and ID values are raw image data or radiance values.

15 30. A method for transporting agricultural information on an area of interest towards an interested entity comprising:

conveying, over a portion of a computer network, a map that provides agricultural information on the area of interest, the map including agricultural information that has been
20 produced using one of the following: data related to an agricultural scene-object, a formula for producing a green vegetation index (GVI), and a formula for producing soil zone index (SZI).

31. A method, as claimed in claim 30, wherein:

25 said computer network includes the Internet.